IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

POWER INTEGRATIONS, INC.,	)	
	)	
Plaintiff,	)	
	)	
v.	)	C.A. No. 08-309-JJF-LPS
	)	
FAIRCHILD SEMICONDUCTOR INTERNATIONAL, INC., FAIRCHILD SEMICONDUCTOR CORPORATION, and SYSTEM GENERAL CORPORATION,	)	
	)	
Defendants.	)	

DEFENDANT AND COUNTERCLAIMANTS'
SUPPLEMENTAL CLAIM CONSTRUCTION BRIEF

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I. INTRODUCTION

On October 9, 2009, the Court ordered that Fairchild submit a supplemental brief directed to "whether a person ordinarily skilled in the art would necessarily understand the 'first reference signal' and the second signal' [of claim 17 of U.S. Patent No. 7,352,595] to be analog signals, given that they are developed and used by operational amplifiers."

Reading the specification and the claims, one of ordinary skill would understand the claimed invention as improving load regulation by including in a power supply circuitry that uses a signal representative of the output current (the "second signal") to adjust a reference voltage inside the regulator (the "first reference signal"), to in turn adjust the regulator output voltage. They would not understand the "first reference signal" and "second signal" to be limited to signals created and used by operational amplifiers as shown in Figure 3, but rather would understand claim 17 to include other embodiments, including those using digital signals. *See SunRace Roots Enter. Co. v. SRAM Corp.*, 336 F.3d 1298, 1302 (Fed. Cir. 2003) (when the invention is not restricted to a particular embodiment it is improper to read limitations from the embodiment into the claims).

II. THE INVENTION OF CLAIM 17 OF THE '595 PATENT

The power supplies of the '595 patent provide regulated voltage to electronic devices, such as cell phones or laptop computers (referred to as a "load" in Figure 1 of the patent). Decl. of Gu-Yeon Wei In Support of Defendants' Suppl. CC Brief ("Wei Suppl. Decl."), ¶ 2; '595 patent, Figure 1; Decl. of Robert Blauschild (8/25/09) ("Blauschild Decl."), ¶ 11. The power supply is connected to the load by a cable. '595 patent, Figure 1 (the cable is illustrated as #46). The voltage provided at the output of the cable is reduced from the voltage provided at the output of the power supply in proportion to both the resistance of the cable and the amount of current flowing through the cable. Wei Suppl. Decl., ¶ 3. As the current flowing through the cable changes, the amount of voltage that is dropped across the cable also changes. *Id.* at ¶¶ 3-4.

The '595 patent discloses an invention compensating for variations in the voltage drop as the output current changes using a signal that represents the output current to adjust a reference

voltage inside the regulator, to in turn adjust the regulator output voltage. '595 patent, 1:57-61 ("To improve the load regulation, the first reference signal is increased in response to the increase of the second signal"); '595 patent, 4:39-42 ("An adjust circuit 700 is coupled to the programmable terminal COMR to adjust the reference signal V_{REF} in accordance with a reference signal V_{REF1} and the second signal V_I"); *see also* Wei Suppl Decl., ¶¶ 4, 8, 11; Blauschild Decl., ¶ 12.

Claim 17 (which depends from claim 16) is directed towards this invention. Claim 17 requires circuitry for producing a "second signal" in response to a current signal that represents the primary-side switching current I_P of the transformer. '595 patent, claim 16. The primary-side switching current and the "second signal" are correlated to the regulator's output current. '595 patent, 5:40-49; 9:35-45; *see also* Wei Suppl. Decl., ¶ 5. The "second signal" varies as the output current varies and accordingly provides information used in compensating for changes in output voltage due to changes in output current. '595 patent, 5:48-49; Wei Suppl. Decl., ¶ 5.

Claim 17 provides that a "first reference signal" is varied in response to changes in the "second signal." '595 patent, claim 17. The "first reference signal" is used to generate a "first feedback signal", which in turn is used to regulate the output voltage of the power converter. '595 patent, claim 16. Thus, as the output current changes, the output voltage is adjusted to compensate for the resulting change in the voltage drop across the cable. Wei Suppl. Decl., ¶ 6.

III. CLAIM 17 SHOULD NOT BE CONSTRUED TO REQUIRE THE USE OF OPERATIONAL AMPLIFIERS OR ANALOG SIGNALS

A. One of ordinary skill would not understand claim 17 to require operational amplifiers or analog signals.

Claim 17 does not require the use of any specific components for generating or using the "second signal" or "first reference signal." Specifically, the claims do not require that the "first reference signal" or "second signal" are developed and used by operational amplifiers. '595 patent, claims 16-17; Wei Suppl. Decl., ¶ 7.

Nor does the specification require the claimed invention to use operational amplifiers and analog signals. Rather, the specification describes the invention as compensating for the voltage drop across a cable using a signal representative of the output current to adjust a reference voltage inside the regulator, to in turn adjust the regulator output voltage. '595 patent, 1:57-61, 4:39-42; Wei Suppl Decl., ¶¶ 4, 8, 11; Blauschild Decl., ¶ 12. The specification further states that the claims should not be limited to the specific circuitry disclosed in the embodiments, explaining that the embodiments are "exemplary" and "serve to explain the ***principles*** of the invention." '595 patent, 2:4-5, 14-16 (emphasis added); *see also* '595 patent, 11:21-27; Wei Suppl. Decl., ¶ 10. Figure 3 illustrates the principles of adjusting the regulator output voltage using a signal that represents the output current to adjust a reference voltage.

One of ordinary skill in the art, reading the patent specification and claims, would not understand the invention to require the use of any particular circuitry, including operational amplifiers or analog signals.[1] Wei Suppl. Decl., ¶¶ 9-11.

B. <u>One of ordinary skill would understand that claim 17 could be implemented using digital circuitry.</u>

One of ordinary skill would not understand the invention of claim 17 to be limited to analog circuitry simply because the embodiment depicted in Figure 3 uses analog circuitry. Most, if not all, operations that can be performed on an analog signal, such as amplifying, filtering, limiting etc., can be performed using digital circuitry on digital/numerical representations of analog signals. Wei Suppl. Decl., ¶ 12. It is typical for circuit designers to use analog representations to describe the functionality of a circuit, even if the circuit is ultimately implemented using digital circuit techniques. Wei Suppl. Decl., ¶ 10. One of ordinary skill, looking at a block diagram of an analog circuit, would understand that it could also be implemented using digital circuitry. *Id.*

[1] The agreed criteria for one of ordinary skill in the art is: (1) a bachelor's or higher degree of electrical engineering or something similar; (2) 3-7 years experience designing analog electronic circuits for switch mode power supplies; (3) familiarity with the basic components used in such circuits including oscillators, counters, and digital-to-analog converters. 9/19/07 Horowitz Trial Tr. 686:20-687:23; 9/20/07 Blauschild Trial Tr. 1077:12-1079:4

Whether analog or digital circuit techniques are used to implement a circuit is a matter of design choice and depends on factors such as size, cost and power consumption. Wei Suppl. Decl., ¶ 12. The trend since the mid-nineties has been to use digital circuit techniques to implement circuits – including circuits that traditionally would have been implemented using analog circuit techniques. *Id.* It is also common to have hybrid circuits that use both analog and digital circuit techniques. *Id.* Given the interchangeability of digital and analog circuits, one of ordinary skill would understand that the invention of the '595 patent could be constructed all, or in part, using digital circuit techniques. *Id.*

In the instant case, looking at the block diagrams of the '595 patent, one of ordinary skill would understand that the depicted circuitry could be implemented using digital or analog circuit techniques, or some combination thereof. *Id.* For example, one of ordinary skill would understand that block 400 of Figure 3, although depicted as analog circuitry, could also be implemented using digital circuitry. *Id.* One example of a digital implementation of block 400 could consist of a voltage controlled oscillator coupled to a counter to create a digital "second signal." *Id.* The voltage controlled oscillator would convert an analog input voltage into a series of pulses whose frequency depends on the voltage. *Id.* By counting these pulses over an interval of time, the counter would generate a digital "second signal" value. *Id.* In fact, the '595 patent teaches a similar circuit that consists of a pulse generator 190 and counter 171 in Figure 4. *Id.* One of ordinary skill in the art would be able to utilize similar digital circuit techniques to implement the rest of the control circuitry, including generating the "first reference signal." *Id.*

With digital signal representations of the "second signal" and "first reference signal," blocks 71 and 72 of Figure 3 (which are operational amplifiers that use those signals) would simply devolve to digital subtract circuitry, which would implement the operation of the analog operational amplifiers. *Id.* Accordingly, one of ordinary skill in the art would not understand the "first reference signal" and "second signal" to be limited to analog signals simply because they are developed and used by operational amplifiers in the embodiment of Figure 3.

C. Claim 17 should not be limited to a disclosed embodiment.

When the invention is not restricted to a particular embodiment, it is improper to read limitations from the embodiment into the claims. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1323 (Fed. Cir. 2005) (acknowledging "danger of reading limitations from the specification into the claim"); *Acumed LLC v. Stryker Corp.*, 483 F.3d 800, 808 (Fed. Cir. 2007) ("limitations from the specification are not to be read into the claims"). This is true even if it is the sole embodiment. *SunRace Roots Enter. v. SRAM Corp.*, 336 F.3d 1298, 1302 (Fed. Cir. 2003).

The Court should reject Power Integrations' attempt to limit claim 17 to an embodiment using operational amplifiers and analog signals. Power Integrations cannot overcome the heavy presumption of ordinary meaning simply by pointing to a disclosed embodiment:

> Our case law makes clear that while an accused infringer may overcome the "heavy presumption" [of ordinary meaning] and narrow a claim term's ordinary meaning, [] he cannot do so simply by pointing to the preferred embodiment or other structures or steps disclosed in the specification or prosecution history. ***An applicant is not required to describe in the specification every conceivable and possible future embodiment of his invention.*** Whether an invention is fairly claimed more broadly than the "preferred embodiment" in the specification is a question specific to the content of the specification, the context in which the embodiment is described, the prosecution history, and if appropriate the prior art.

SunRace, 336 F.3d at 1305-1306 (emphasis added, internal quotations and citations omitted). As discussed above, in the instant case, the invention is claimed more broadly than the embodiment using operational amplifiers to generate and use analog signals. That embodiment simply serves to illustrate the principles of the invention, i.e., using a signal representative of the output current to adjust a reference voltage inside the regulator, to in turn adjust the regulator output voltage. '595 patent, 2:4-5, 14-16. That embodiment is not intended to provide novel meanings for claim terms or to restrict the scope of the claims. *See e.g., SunRace*, 336 F.3d at 1302.

IV. CONCLUSION

For the foregoing reasons, and the reasons set forth in their opening and responsive claim construction briefs, Defendants and Counterclaimants respectfully request the Court to give the phrase "first reference signal is varied in response to the change of the second signal" its plain and ordinary meaning.

ASHBY & GEDDES

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